

**AMENDMENTS TO THE CLAIMS:**

Please replace the claims with the claims provided in the listing below wherein status, amendments, additions and cancellations are indicated.

1-9. (Canceled)

10. (New) A method for producing nuclear spin polarized xenon gas, comprising:

heating a glass cell filled with solid rubidium and solid xenon in the pressure reducing state of being absent in oxygen to produce therein gaseous xenon and a mixture of gas and liquid phases of rubidium,

irradiating with a laser beam the gaseous xenon and the mixed-phase rubidium that is in the glass cell and is produced from the solid xenon and solid rubidium, and

applying a magnetic field to the irradiated gaseous xenon and mixed-phase rubidium in the glass cell to achieve the nuclear spin polarized xenon gas.

11. (New) The method of claim 10, further comprising:

removing nuclear spin polarized xenon gas from the glass cell; and

during said removing, introducing xenon gas into the glass cell in a manner that maintains fixed pressure within the glass cell.

12. (New) The method of claim 11, wherein said xenon gas is introduced from a xenon gas supply device into the glass cell along primary side piping, located between the xenon gas supply device and a first air operate valve, and second side piping, located between the first air operate valve and the glass cell; and further comprising:

replacing the xenon gas supply device while the glass cell is coupled to the secondary side piping and to outlet piping;

vacuuming the primary side piping; and

pressurizing the primary side piping with nitrogen gas,

wherein the vacuuming and pressurizing are repeated automatically at least three times after the replacing.

13 (New) The method of claim 11, wherein said xenon gas is introduced from a xenon gas supply device into the glass cell along primary side piping, located between the xenon gas supply device and a first air operate valve, and second side piping, located between the first air operate valve and the glass cell; wherein nuclear spin polarized xenon gas is removed from the glass cell through

outlet piping, and wherein branch piping connects between a valve at the outlet piping and a second air operate valve coupled to the primary side piping, and further comprising:

replacing the glass cell with another glass cell filled with solid rubidium and solid xenon;

opening the first and second air operate valves and the valve at the outlet piping;

vacuuming the primary side piping, secondary side piping, and branch piping;

pressurizing the primary side piping, secondary side piping, and branch piping with nitrogen gas; and

closing the first and second air operate valves and the valve at the outlet piping;

wherein the opening, vacuuming, pressurizing, and closing are repeated automatically at least three times after the replacing.

14. (New) A method of producing a glass cell filled with solid rubidium and solid xenon in a vacuum from glass encased rubidium located in a chamber, the chamber coupled to the glass cell by piping, the method comprising;

exhausting the piping with a vacuum generator;

breaking the glass that encases the rubidium;  
heating the rubidium, the piping and the glass cell causing rubidium to enter into a gaseous state, wherein the gaseous rubidium enters the glass cell;  
cooling the glass cell causing rubidium to precipitate as a solid within the glass cell;  
filling the glass cell having solid rubidium with xenon gas;  
isolating the filled glass cell; and  
cooling the isolated glass cell causing xenon within the glass cell to solidify and the glass cell to assume a pressure reducing state.

15. (New) An apparatus for producing nuclear spin polarized xenon gas, comprising:

means for heating a glass cell filled with solid rubidium and solid xenon in the pressure reducing state of being absent in oxygen to produce therein gaseous xenon and a mixture of gas and liquid phases of rubidium;

a laser projecting a beam into the glass cell for irradiating the gaseous xenon and the mixed-phase rubidium; and

means for applying a magnetic field to the irradiated gaseous xenon and mixed-phase rubidium to achieve the nuclear spin polarized xenon gas.

16. (New) The apparatus of claim 15, further comprising:

means for introducing xenon gas while taking out the produced nuclear spin polarized xenon gas; and

pressure regulating means for maintaining a fixed pressure within the glass cell while xenon gas is being introduced and nuclear spin polarized xenon gas is being taken out.

17. (New) The apparatus of claim 15, further comprising:

a xenon gas supply device;

a first air operate valve;

primary side piping coupling the xenon gas supply device to the first air operate valve;

second side piping coupling the glass cell to the first air operate valve;

pressure regulating means;

a second air operate valve coupled to the primary side piping;

outlet piping coupling the glass cell to an outlet;

a third valve coupled to the outlet piping; and

branch piping coupled to the second air operate valve, the branch piping having a first branch coupled to the third valve and having a second branch coupled to a vacuum generator.

18. (New) An apparatus for producing a glass cell having solid rubidium and solid xenon in a vacuum therein, comprising:

a chamber housing glass encased rubidium;

piping coupling the chamber and a glass cell;

a vacuum generator coupled to the piping for exhausting the piping;

means for breaking the glass that encases the rubidium;

means for heating the rubidium, the piping and the glass cell causing rubidium to enter into a gaseous state, wherein the gaseous rubidium enters the glass cell;

means for cooling the glass cell causing rubidium to precipitate as a solid within the glass cell;

means for filling the glass cell having solid rubidium with xenon gas; and

means for cooling the filled glass cell causing xenon within the glass cell to solidify and the glass cell to assume a pressure reducing state.

19. (New) The method of claim 10, wherein said heating, irradiating, and applying produce a highly concentrated, spin-polarized xenon gas in the glass cell, and wherein output from the glass cell may be used in an NMR/MRI process without first being frozen.

20. (New) The method of claim 11, further comprising:  
after said removing and introducing, isolating the glass cell to prevent entry or exit of contents;  
cooling the isolated glass cell sufficiently to solidify xenon gas content;  
and  
repeating the steps of removing and introducing.

21. (New) The apparatus of claim 16, further comprising:  
means for isolating the glass cell to prevent entry or exit of contents; and  
means for cooling the isolated glass cell sufficiently to solidify xenon gas content.